DOCKET NO. 10847ABUS01U (NORT10-00170)
Customer No. 33000

PATENT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	:	Ayman Bedair, et al.
Serial No.	:	09/475,269
Filed	:	December 30, 1999
For	:	ADAPTIVELY MAINTAINING QUALITY OF SERVICE (QoS) IN DISTRIBUTED PBX NETWORKS
Group No.	:	2666
Examiner	:	K.C. Harper

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
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Sir:

APPEAL BRIEF

The Appellant has appealed to the Board of Patent Appeals and Interferences from the decision of the Examiner dated August 19, 2005, finally rejecting Claims 1, 3-14 and 20-32 (and objecting to Claims 15 and 33, and allowing Claim 2) The Appellant filed a Notice of Appeal on December 19, 2005, which was received by the U.S. Patent and Trademark Office on December 28, 2005. The Appellant respectfully submits this brief on appeal with the statutory fee of $500.00.

REAL PARTY IN INTEREST

This application is currently owned by Nortel Networks Limited as indicated by assignments recorded in the Assignment Records of the United States Patent and Trademark Office at Reel/Frame 010612/0692 and Reel/Frame 011195/0706, respectively.

RELATED APPEALS AND INTERFERENCES

There are no known appeals or interferences that will directly affect, be directly affected by, or have a bearing on the Board's decision in this pending appeal.

STATUS OF CLAIMS

Claims 1, 3-14 and 20-32 have been rejected, Claims 15 and 33 have been objected to, and Claim 2 has been allowed, all pursuant to a final Office Action dated August 19, 2005. Claims 1, 3-14 and 20-32 are presented for appeal. A copy of the pending claims is provided in Appendix A.

STATUS OF AMENDMENTS

The Appellant filed a RESPONSE TO FINAL OFFICE ACTION on October 19, 2005, in response to the Office Action dated August 19, 2005. The RESPONSE did not amend the claims. The Examiner responded in an Advisory Action, mailed November 14, 2005, that the RESPONSE did not place the application in condition for allowance.

SUMMARY OF CLAIMED SUBJECT MATTER

Regarding Claim 1, a method of dynamically adapting a PBX network to maintain a Quality of Service level in the network is provided. (Application, page 1, lines 13-15; page 2, lines 30-32). The method includes identifying a parameter associated with a data packet transported across the network (Application, page 11, line 20-22) and measuring the parameter. (Application, page 11, line 23 through page 13, line 12). The method further includes enabling optimization of the network bandwidth when said measured parameter differs from a predetermined value. (Application, page 13, lines 14-17; Figure 20; see also, page 13, line 18 through page 16, line 18; page 22 line 10).

Regarding Claim 20, an apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network is provided. (Application, page 1, lines 13-15; page 2, lines 30-32). The apparatus includes a parameter identifying mechanism for identifying a parameter associated with a data packet transported across the network (Application, page 11, line 20-22) and a parameter measuring device for measuring the parameter. (Application, page 11, line 23 through page 13, line 12). The apparatus further includes an optimization enabling device for optimizing the bandwidth of the network when said measured parameter differs from a predetermined value. (Application, page 13, lines 14-17; see also, page 13, line 18 through page 16, line 18; page 22 line 10).

GROUNDS OF REJECTION

1. Claims 1 and 20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,726,985 to Daniel, et al.

2. Claims 3, 6-8, 21 and 24-26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,726,985 in view of U.S. Patent Publication No. 2003/0091028 to Chang, et al.

3. Claims 4-5 and 22-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,726,985 in view of U.S. Patent Publication No. 2003/0140159 to Campbell, et al..

4. Claims 9-15 and 27-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,726,985 in view of U.S. Patent Publication No. 2003/0091028 and further in view of U.S. Patent No. 6,363,371 to Geagan III, et al.

ARGUMENT

I. GROUND OF REJECTION #1 (§ 102 REJECTION)

The rejection of Claims 1 and 20 stand rejected under 35 U.S.C. § 102(b) is improper and should be withdrawn.

A. OVERVIEW

Claims 1 and 20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,726,985 B1 to Daniel, et al. ("Daniel").

A copy of Daniel is provided in Appendix D.

B. STANDARD

A cited prior art reference anticipates the claimed invention under 35 U.S.C. § 102 only if every element of a claimed invention is identically shown in that single reference, arranged as they are in the claims. MPEP § 2131; *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). Anticipation is only shown where each and every limitation of the claimed invention is found in a single cited prior art reference. MPEP § 2131; *In re Donohue*, 766 F.2d 531, 534, 226 U.S.P.Q. 619, 621 (Fed. Cir. 1985).

C. THE DANIEL REFERENCE

The Daniel reference describes a single-chip integrated circuit ATM communication system interconnection/termination unit (ATMCSI/TU) 32 for use in ATM interconnection routers or termination devices. (Col. 11, lines 17-23). The ATMCSI/TU 32 includes a programmable microprocessor and several hardware coprocessors under the control of the microprocessor, which further allow the microprocessor to perform the tasks of actual communication of digital data

packets. (Abstract). Various operations and a functional diagram of the ATMCSI/TU 32 are described. (Col. 11, line 49 thru Col. 14, line 6).

The ATMCSI/TU 32 includes a scheduler unit 46 that manages a memory-resident calendar table. (Col. 21, lines 31-38). Each entry in the calendar table corresponds to one cell slot (time interval) and identifies a list of virtual connections (VCs) that need to be serviced in that slot. Col. 33, lines 46-48). The ATMCSI/TU 32 functions "to appropriately shape user traffic before it is presented to the ATM network...." (Col. 22, lines 49-51). Such shaping may be either fixed for the duration of the VC, or may vary in response to network congestion." (Col. 33, lines 51-54). "Traffic shaping" requires that cells from a VC be scheduled for transmission at a specific time in the future. (Col. 33, lines 53-55). Calendars are used to achieve this scheduling. (Col. 33, lines 56-57).

D. CLAIM 1

Independent Claim 1 recites a method of dynamically adapting a PBX network to maintain a QoS in the network, the method including identifying a parameter associated with a data packet transported across the network, measuring the parameter, and enabling optimization of the network bandwidth when the measured parameter differs from a predetermined value. For ease of reference, Appellant sets forth below those portions of Daniel cited by the Office Action as supporting the anticipation rejection:

> Consequently, differing classes of service are provided to users of ATM systems. One class of service is constant-bit-rate (CBR) service, and is commonly used for audio communications and un-compressed video information. With constant-bit-rate service a cell is transmitted from a given connection on a regularly repeating time interval, perhaps one cell every couple of microseconds. Another class of service is variable-bit-rate (VBR) service, and is commonly used to transmit compressed video data. The cell rate in this instance is variable dependent on the video compression

> technique in use and the video image contents (i.e., rate of video image change or frames per second). Understandably, managing these variable-bit-rate services becomes a burdensome task when a multitude of connections (perhaps in the thousands) are being maintained simultaneously.
>
> Col. 3, lines 26-41.

> Still further, the present invention has as an object the provision of an ATMCSI/TU having a scheduler-based and variable transmission interval technique for traffic shaping of a variable-bit-rate (VBR) traffic stream.
>
> Accordingly, the present invention provides an ATMCSI/TU having a scheduler-based implementation of a traffic shaper rather than a more conventional timer-based traffic shaper.
>
> An advantage of the scheduler-based traffic shaping carried out by the present invention is a reduction in CPU workload, and an increased data transfer rate.
>
> Col. 8, lines 16-27.

> This shaping can either be fixed for the duration of a connection (such as for VBR traffic), or can vary in response to network congestion (for example, for ABR traffic).
>
> Col. 33, lines 51-54.

The final Office Action asserts that "Daniels discloses that congestion as a network parameter is used to determine whether to optimize the network bandwidth by changing the data rate of an available bit rate (ABR) connection" citing Col. 33, lines 51-54. The Office Action mischaracterizes the cited passage as teaching substantially more than what is actually disclosed. First, there is no reference to a parameter or that such a parameter is being measured. Second, "traffic shaping" refers to the scheduling of cells for transmission at a specific time in the future (see, Col. 33, lines 54-56). There is no evidence that this description equates to optimizing the network bandwidth or changing

the data rate of the ABR connection. Finally, there is no disclosure that the "network congestion" recited in Daniel is based on measurement of "a parameter that is associated with a data packet transported across the network" - as recited in independent Claims 1 and 20.

Daniel fails to disclose identifying a parameter (e.g., latency, packet loss rate, bandwidth availability, as described in the Applicant's specification, pages 10-13) associated with a data packet transported across the network, and measuring that parameter. The cited portion of Daniel refers to "network congestion" in general terms, without any further explanation of what is meant by "network congestion," how it is measured, or showing how this is the same as "a parameter associated with a data packet transported over the network." Moreover, Daniel fails to disclose enabling optimization (optimization mechanism, optimization enabling device) of the network bandwidth (adjusting or optimizing the bandwidth of the network) when a measured parameter (of a data packet transported across the network or a value associated with a given packet) differs from a predetermined value. The cited passages of Daniel fail to disclose each and every element/feature of Appellant's Claim 1.

Daniel does not appear to adapt the PBX network in order to maintain a QoS in the network, but describes some sort of "traffic shaping" that "requires that cells from a connection (i.e., a VC) be scheduled for transmission at a specific time in the future". Col. 33, lines 51-57. No identification of any particular parameter of a data packet, or even measurement of such a parameter, is described in Daniel. While "congestion" may be a condition of a network, congestion is not a measurement or attribute of a packet(s) flowing through the network. Moreover, there is no description in Daniel of enabling optimization of the network bandwidth as taught and described in Appellant's Application,

and as recited in the claims.

For these reasons, the Office Action has failed to establish that Daniel anticipates all elements of independent Claim 1. Accordingly, the Appellant respectfully requests that the final rejection of Claim 1 be withdrawn and that Claim 1 be passed to allowance.

D. <u>CLAIM 20</u>

Independent Claims 20 recites an apparatus for dynamically adapting a PBX network to maintain a QoS level in the network, the apparatus including a parameter identifying mechanism for identifying a parameter associated with a data packet transported across the network, a parameter measuring device for measuring the parameter, and an optimization enabling device for enabling optimization of the bandwidth of the network when the measured parameter differs from a predetermined value.

Appellant relies on its arguments set forth above, and further submits that Daniel fails to disclose any device that measures a parameter (associated with a data packet transported across the network). Daniel merely refers to "network congestion" without any further explanation or description of how or what measures such "network congestion." Thus, Daniel simply does not disclose a parameter measuring device, as recited in Appellant's Claim 20.

For these reasons, the Office Action has failed to establish that Daniel anticipates all elements of independent Claim 20. Accordingly, the Appellant respectfully requests that the final rejection of Claim 20 be withdrawn and that Claim 20 be passed to allowance.

II. GROUND OF REJECTION #2 (§ 103 REJECTION)

The rejection of Claims 3, 6-8, 21 and 24-26 under 35 U.S.C. § 103(a) is improper and should be withdrawn.

A. OVERVIEW

Claims 3, 6-8, 21 and 24-26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Daniel in view of U.S. Patent Application Publication 2003/0091028 to Chang, et al ("Chang").

A copy of Chang is provided in Appendix D.

B. STANDARD

In *ex parte* examination of patent applications, the Patent Office bears the burden of establishing a *prima facie* case of obviousness. (*MPEP § 2142; In re Fritch, 972 F.2d 1260, 1262, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992)*). The initial burden of establishing a *prima facie* basis to deny patentability to a claimed invention is always upon the Patent Office. (*MPEP § 2142; In re Oetiker, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); In re Piasecki, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984)*). Only when a *prima facie* case of obviousness is established does the burden shift to the Appellant to produce evidence of nonobviousness. (*MPEP § 2142; In re Oetiker, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993)*). If the Patent Office does not produce a *prima facie* case of unpatentability, then without more the Appellant is entitled to grant of a patent. (*In re Oetiker, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); In re Grabiak, 769 F.2d 729, 733, 226 U.S.P.Q. 870, 873 (Fed. Cir. 1985)*).

A *prima facie* case of obviousness is established when the teachings of the prior art itself suggest the claimed subject matter to a person of ordinary skill in the art. (*In re Bell, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1993)*). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, and not based on Appellant's disclosure. (*MPEP § 2142*).

C. THE CHANG REFERENCE

Chang describes a voice gateway system for use within a company that routes a voice call either over an internet protocol (IP) network or the public switched telephone (PST) network. (Abstract). A voice call over the IP network is monitored, and when the quality of the IP voice call falls below a predetermined threshold, the gateway switches the voice call to the PST network, referred to as "fallback to PST NETWORK". (Pages 4-5, paragraph 0046; pages 19-22, paragraphs 0163-0176). Chang further describes various "Enterprise Directory Schema Extensions" to support IP telephony. (Pages 9-12, paragraphs 0113-0115, Table 1). The gateway monitors QoS (may be specified in terms of end-to-end delay, packet loss and jitter) during VoIP calls using the standard realtime transport protocol (RTCP). (Page 19, paragraph 0163). If QoS falls below a predetermined threshold, the gateway sets up an alternate connection over the PST NETWORK and switches the

call to the PST NETWORK connection. (Page 19, paragraph 0163). Thus, Chang appears to monitor VoIP packets on a per voice call basis (i.e., individual packets in a voice call are monitored via RTCP) because Chang does not describe switching all VoIP calls, only the individual VoIP call experiencing QoS below the threshold. Chang does not appear to describe any methods or actions taken by the system with respect to the network bandwidth when a VoIP call is switched to the PST NETWORK.

D. CLAIMS 3, 6-8, 21 AND 24-26

Claims 3 and 6-8 depend directly (or indirectly) from independent Claim 1. Claims 21 and 24-26 depend directly (or indirectly) from independent Claim 20. As shown above, independent Claims 1 and 20 are patentable. As a result, Claims 3, 6-8, 21 and 24-26 are patentable due to their dependence from an allowable base claim.

Chang does not and cannot supply the deficiencies of Daniel that have been previously pointed out by the Appellant.

The Office Action concedes that Daniel does not disclose determining congestion based on a packet sequence, but further argues that Chang discloses that a QoS of voice information using IP packets is determined by packets arriving out of order, citing page 12, Table 1, VoIP QoS Parameters. (Office Action mailed August 19, 2005, page 3, paragraph number 2). Based on this, the Office Action argues that it would be obvious to determine a QoS value related to packets arriving out-of-order in the invention in Daniel in order to "choose a better path" for voice information.

The relevant portion of Table 1 appears to describe that the VOIP QOS Parameters (as part of new attributes included in the Enterprise Directory Schema Extension) specifies that these QoS VoIP Parameters may include VoIP QoS Detection (interval for checking VoIP QoS) and VoIP QoS Threshold (which is used to trigger the gateway server to fallback to the PST Network, and refers to Lost Packets, Packets Out Of Order, and Round Trip Delay). As noted above, Chang describes that when VoIP QoS parameters exceed a threshold, the gateway server performs a "fallback" to the conventional PST NETWORK. In Chang, a VoIP call is monitored and if the quality of that voice call falls below a predetermined quality level (as determined using RTCP), the gateway server automatically sets up a standard voice call over the conventional PST NEWORK and switches the call. (Pages 4-5, paragraph 0046; Page 2, paragraph 0016).

As noted in the Office Action, Chang chooses "a better path" for the VoIP call when the QoS of that VoIP call falls below a threshold. Thus, Chang appears to monitor VoIP packets on a per voice call basis (i.e., individual packets in a voice call are monitored via RTCP) since Chang does not describe switching all VoIP calls to the PST NETWORK, only the individual VoIP call experiencing QoS below the threshold. Chang does not appear to describe any methods or actions taken by the system with respect to the network bandwidth when a VoIP call is switched to the PST NETWORK. Therefore, Chang teaches or suggests that the VoIP call should be individually switched to the conventional PST NETWORK – with no teaching or suggestion that the network bandwidth should be modified or optimized. Chang leaves unchanged the PBX or underlying data network and its bandwidth.

As with Daniel, Chang fails to describe, teach or suggest enabling optimization of the

network bandwidth when the measured parameter differs from a predetermined threshold. Instead, Chang simply reroutes the voice call to the PST NETWORK, and fails to address the issue of optimization of the bandwidth in the network itself. Thus, Chang fails to disclose, teach or suggest the noted deficiencies of Daniel. Stated again, no procedures appear to be disclosed in Chang to enable optimization of the network bandwidth when the measured parameter differs from the threshold. In other words, Chang merely monitors a voice call, and if the voice call quality does not meet the threshold, the voice call is switched to the PST NETWORK. Thus, Chang teaches away from enabling optimization of the network bandwidth for the network - as Chang switches networks.

Additionally, Chang does not appear compatible with Daniel. If combined, the resulting disclosure of Daniel would teach switching the data packets of a particular virtual connection (VC) carried over one data network to a PST NETWORK. This result does not appear even practical, and even if practical, it does not address the problem of optimizing the network bandwidth of a PBX network. As such, the combination of Daniel and Chang (even if combinable) does not teach or suggest all the elements/features of Claims 3, 6-8, 21 and 24-26.

Accordingly, the Appellant respectfully requests that the § 103 rejection of Claims 3, 6-8, 21 and 24-26 be withdrawn and that Claims 3, 6-8, 21 and 24-26 be passed to allowance.

III. GROUND OF REJECTION #3 (§ 103 REJECTION)

The rejection of Claims 4-5 and 22-23 under 35 U.S.C. § 103(a) is improper and should be withdrawn.

A. OVERVIEW

Claims 4-5 and 22-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Daniel in view of U.S. Patent Application Publication 2003/0140159 to Campbell, et al ("Campbell").

A copy of Campbell is provided in Appendix D.

B. STANDARD

See above, Section II, B

C. THE CAMPBELL REFERENCE

Campbell describes a system for transmitting real-time continuous media information (video or audio) over a network, more particularly the Internet. (Abstract; Page 1, paragraph 0001). Campbell describes a new protocol that detects congestion by measuring inter-arrival time between subsequent packets. (Page 8, paragraph 0136). In response to the inter-arrival times of received packets exceeding an expected value, the server transmitting the video stream "thins" the video stream by reducing the amount of data injected into the network. This may be done by reducing the number of frames sent or reducing image quality. (Page 8, paragraphs 0133-0136). Packet loss may also be indicative of network congestion. (Page 8, paragraph 0139).

D. CLAIMS 4 AND 22

Claim 4 depends from independent Claim 1. Claim 22 depends from independent Claim 20.

As shown above, independent Claims 1 and 20 are patentable. As a result, Claims 4 and 22 are patentable due to their dependence from an allowable base claim. Further, these claims include elements/features not disclosed, taught or suggested by the two references.

Campbell does not and cannot supply the deficiencies of Daniel that have been previously pointed out by the Appellant.

The Office Action concedes that Daniel does not disclose determining congestion based on packet inter-arrival time, but further argues that Campbell discloses detecting congestion based on packet inter-arrival times, citing page 8, paragraphs 0136, 0139. (Office Action mailed August 19, 2005, page 3, paragraph number 3). Based in this, the Office Action argues that it would be obvious to detect congestion based on arrival times of subsequent packets in the invention of Daniel in order to "passively detect network defects at a destination."

As noted above, when network congestion is detected in Campbell, the server transmitting the data packets reduces the amount of information injected into the network. As such, it appears that Campbell merely describes that when congestion is detected, the original video data stream being transmitted is altered/modified so that less data is transmitted and injected into the network. Appellant respectfully submits that Campbell does not enable optimization of the network bandwidth (such as static or adaptive bandwidth optimization, as described in Appellant's Application), but simply slows down the data input rate from a particular source. As with Daniel, Campbell fails to describe, teach or suggest enabling optimization of the <u>network bandwidth</u> when the measured parameter differs from a predetermined threshold. Instead, the data source connected in Campbell's network simply reduces the data input rate, and fails to address the issue of optimization of the

bandwidth in the network itself. Thus, Campbell fails to disclose, teach or suggest the noted deficiencies of Daniel.

In addition, Campbell measures inter-arrival times of packets received at the destination device, and the device reports this information to the server. (Page 8, paragraph 0136). In contrast, Claims 4 and 22 recite the measurement of the difference in arrival times of packets sent across the network and back between a first packet and a second packet. Campbell's packets appear to be sent from the server to the destination device, where the difference in arrival times is measured. Thus, Campbell does not appear to measure difference in arrival times for packets sent across the network and back, as recited in Claims 4 and 22. Campbell does not disclose, teach or suggest this element/feature. Therefore, the combination of Daniel and Campbell (even if combinable) does not teach or suggest all the elements/features of Claims 4 and 22.

Accordingly, the Appellant respectfully requests that the § 103 rejection of Claims 4 and 22 be withdrawn and that Claims 4 and 22 be passed to allowance.

E. CLAIMS 5 AND 23

Claim 5 depends from independent Claim 1. Claim 23 depends from independent Claim 20. As shown above, independent Claims 1 and 20 are patentable. As a result, Claims 5 and 23 are patentable due to their dependence from an allowable base claim. Further, these claims include elements/features not disclosed, taught or suggested by the two references.

Applicant reiterates the arguments set forth above with respect to Claims 4 and 22 herein that Campbell does not and cannot supply the deficiencies of Daniel that have been previously pointed out by the Appellant.

As noted above, Campbell measures inter-arrival times of packets received at the destination device, and the device reports this information to the server. (Page 8, paragraph 0136). In contrast, Claims 5 and 23 recite the measurement of the difference in arrival times of <u>packets sent across the network and back between the average value of arrival times of a group of packets and a second packet</u>. Campbell's packets appear to be sent from the server to the destination device, where the difference in arrival times is measured. Thus, Campbell does not appear to measure difference in arrival times for packets sent across the network and back or that such measurement is between the average value of a group of packets and a second packet, as recited in Claims 5 and 23. Therefore, the combination of Daniel and Campbell (even if combinable) does not teach or suggest all the elements/features of Claims 5 and 23.

Accordingly, the Appellant respectfully requests that the § 103 rejection of Claims 5 and 23 be withdrawn and that Claims 5 and 23 be passed to allowance.

IV. GROUND OF REJECTION #4 (§ 103 REJECTION)

The rejection of Claims 9-14 and 27-32 under 35 U.S.C. § 103(a) is improper and should be withdrawn.

A. OVERVIEW

Claims 9-14 and 27-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Daniel in view of Chang (as applied to Claim 8 or 26), and further in view of U.S. Patent No. 6,363,371 B1 to Geagan, et al. ("Geagan").

A copy of Geagan is provided in Appendix D.

B. STANDARD

See above, Section II, B

C. THE GEAGAN REFERENCE

Geagan describes a method and apparatus that, when data loss is unacceptable between a source and device, additional connections are established between the source and destination. (Abstract). When multiple connections are opened, the data streams are seamed together using packet sequence numbers and/or time stamps. (Abstract). Geagan relates to a scheme of merging together information from multiple input data streams to produce an output data stream that includes fewer "gaps" and is used, in one example, for streaming content delivered via the Internet. (Col. 1, lines 5-10). The counters of Geagan are used to allow the sequencer to step through different input streams, looking for the next packet to apply to the merged stream. (Col. 12, lines 63-67).

D. CLAIMS 9 AND 27

Claim 9 depends (directly or indirectly) from independent Claim 1. Claim 27 depends (directly or indirectly) from independent Claim 20. As shown above, independent Claims 1 and 20 are patentable. As a result, Claims 9 and 27 are patentable due to their dependence from an allowable base claim. Further, these claims include elements/features not disclosed, taught or suggested by the three references.

Geagan does not and cannot supply the deficiencies of Daniel and Chang that have been previously pointed out by the Appellant.

The Office Action concedes that Daniel and Chang do not disclose incrementing a packet counter as claimed, but further argues that Geagan discloses incrementing a counter by one to keep

track of the sequence of incoming packets and incrementing a counter by more than one if a packet is lost, citing Abstract, Figures 3 and 6, steps 78 and 84-90. (Office Action mailed August 19, 2005, page 4, paragraph number 4). Based in this, the Office Action argues that it would be obvious to keep track of a sequence of packets using a counter in the invention of Daniel and Chang in order to "properly convey the real-time information within received packets." (citing Geagan, Col. 2, lines 38-42).

The teachings of Geagan regarding counters and sequence packets appears to be related to the ability to merge a data stream transmitted and received over three channels back into the original data stream. Importantly, Geagan's use of counters is limited to the reordering of packets received over different connections, not for indicating there may be congestion in the network. Thus, the teachings of Geagan are not remotely applicable to Appellant's invention, and therefore, a person of ordinary skill in the art would not look to Geagan for teaching the elements/features as recited in Claims 9 and 27.

Accordingly, the Appellant respectfully requests that the § 103 rejection of Claims 9 and 27 be withdrawn and that Claims 9 and 27 be passed to allowance.

E. <u>CLAIMS 10 AND 28</u>

Claim 10 depends (directly or indirectly) from independent Claim 1. Claim 28 depends (directly or indirectly) from independent Claim 20. As shown above, independent Claims 1 and 20 are patentable. As a result, Claims 10 and 28 are patentable due to their dependence from an allowable base claim. Further, these claims include elements/features not disclosed, taught or suggested by the three references.

As noted with respect to Claims 9 and 27, Geagan does not and cannot supply the deficiencies of Daniel and Chang that have been previously pointed out by the Appellant. Geagan simply does not initiate any type of bandwidth optimization of the network bandwidth when counter is incremented to a certain level. As noted, Geagan uses counters to assist in reordering packets received over different connection paths.

Accordingly, the Appellant respectfully requests that the § 103 rejection of Claims 9 and 27 be withdrawn and that Claims 9 and 27 be passed to allowance.

F. <u>CLAIMS 11-14 AND 29-32</u>

Claims 11-14 depend (directly or indirectly) from independent Claim 1. Claims 29-32 depend (directly or indirectly) from independent Claim 20. As shown above, independent Claims 1 and 20 are patentable. As a result, Claims 11-14 and 29-32 are patentable due to their dependence from an allowable base claim. Further, these claims include elements/features not disclosed, taught or suggested by the cited references.

As noted with respect intervening dependent claims, Geagan does not and cannot supply the deficiencies of Daniel and Chang that have been previously pointed out by the Appellant.

Additionally, the Office Action relies upon the main reference, Daniel, to disclose, teach or suggest the elements/features recited in the claims, citing Col. 15, lines 51-55. (Office Action mailed August 19, 2005, page 4, paragraph number 5) (Appellant notes that this citation may possibly be to Col. 33, not Col. 15.). As set forth above with respect to the rejections of Claims 1 and 20, Daniel fails to disclose enabling optimization (optimization mechanism, optimization enabling device) of the network bandwidth (adjusting or optimizing the bandwidth of the network) when a measured

parameter (of a data packet transported across the network or a value associated with a given packet) differs from a predetermined value. The cited passages of Daniel fail to disclose each and every element/feature of Appellant's Claims 11-14 and 29-32. Daniel does not appear to adapt the PBX network in order to maintain a QoS in the network, though it does describe some sort of "traffic shaping" that "requires that cells from a connection (i.e., a VC) be scheduled for transmission at a specific time in the future". Col. 33, lines 51-57. There is no description in Daniel of enabling optimization of the network bandwidth as taught and described in Appellant's Application, and as recited in the claims.

SUMMARY

The Appellant has demonstrated that the present invention as claimed is clearly distinguishable over the prior art cited of record. Therefore, the Appellant respectfully requests that the Board of Patent Appeals and Interferences reverse the final rejection of the Examiner and instruct the Examiner to issue a notice of allowance of all claims.

The Appellant has enclosed a check in the amount of $500.00 to cover the cost of this Appeal Brief. The Appellant does not believe that any additional fees are due. However, the Commissioner is hereby authorized to charge any additional fees (including any extension of time fees) or credit any overpayments to Davis Munck Deposit Account No. 50-0208.

Respectfully submitted,

DAVIS MUNCK, P.C.

Date: 2/28/2006

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APPENDIX A

PENDING CLAIMS

1. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising the steps of:

identifying a parameter associated with a data packet transported across the network;

measuring the parameter; and

enabling optimization of the network bandwidth when said measured parameter differs from a predetermined value.

2. (Original) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising:

first and second PBX cabinets interconnected in a local area network configuration for sending and receiving data packets;

a register in connection with at least one of said cabinets for storing a value associated with a given packet;

a comparator for comparing said value with a predetermined value; and

an optimization mechanism for adjusting the bandwidth of the network when said measured value differs from a predetermined value.

3. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 1, wherein:

said parameter comprises a sequence number associated with the payload portion of said data packet.

4. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 1, wherein:

said parameter comprises measurement of the difference in arrival times of packets sent across the network and back between a first packet and a second packet.

5. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 1, wherein:

said parameter comprises measurement of the difference in arrival times of packets sent across the network and back between the average value of arrival times of a group of packets and a second packet.

6. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 3, further comprising the substep of:

storing the sequence numbers of data packets in a register.

7. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 6 further comprising the substep of:
storing sequence numbers associated with successive data packets in the register.

8. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 7 further comprising the substep of:
monitoring the sequence of sequence numbers associated with successive data packets stored.

9. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 8 further comprising the substep of:
incrementing a counter in the register by a count of one when the sequence numbers of successive data packets stored are in sequential order; and
incrementing the counter by a count greater than one when the sequence numbers of successive data packets stored are out of sequential order.

10. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 9, further comprising the substep of:
initiating bandwidth optimization when said counter count is incremented by a count greater than one.

11. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 10, wherein:
said bandwidth optimization comprises static optimization.

12. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 11, wherein:
said static optimization comprises limiting the number of channels available on the network.

13. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 10, wherein:
said bandwidth optimization comprises adaptive optimization.

14. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 13, wherein:
said adaptive optimization comprises the step of determining which channels are physically represented by cards connected to a PBX network cabinet.

15. (Original) A method of dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 13, wherein:

said adaptive optimization comprises the step of determining whether a channel is inactive and re-mapping an active channel to an available inactive one.

16.-19. (Canceled)

20. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising:

a parameter identifying mechanism for identifying a parameter associated with a data packet transported across the network;

a parameter measuring device for measuring the parameter; and

an optimization enabling device for optimizing the bandwidth of the network when said measured parameter differs from a predetermined value.

21. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network as set forth in claim 20, wherein:

said parameter comprises a sequence number associated with the payload portion of said data packet.

22. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network as set forth in claim 20, wherein:

said parameter is derived from measurement of the difference in arrival times of packets set across the network and back between a first packet and a second packet.

23. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain Quality of Service level in the network as set forth in claim 20, wherein:

said parameter is derived from measurement of the difference in arrival times of packets sent across the network and back between the average value of arrival times of a group of packets and a second packet.

24. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in a network as set forth in claim 21, wherein:

sequence numbers of the data packets are stored in a register.

25. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in a network as set forth in claim 24 wherein:

sequence numbers associated with successive data packets are stored in the register.

26. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network as set forth in claim 25 wherein:

the sequence of sequence numbers associated with stored successive data packets is monitored.

27. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 26 wherein:

a counter in the register is incremented by a count of one when the sequence numbers of successive data packets stored are in sequential order; and

the counter is incremented by a count greater than one when the sequence numbers of successive data packets stored are out of sequential order.

28. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network as set forth in claim 27, wherein:

bandwidth optimization is initiated when the counter count is incremented by a count greater than one.

29. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network as set forth in claim 28, wherein:

bandwidth optimization comprises static optimization.

30. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network as set forth in claim 29, wherein:

static optimization comprises limiting the number of channels available on the network.

31. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network as set forth in claim 28, wherein:

bandwidth optimization comprises adaptive optimization.

32. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network as set forth in claim 29, further comprising:

adaptive optimization apparatus which determines which channels are physically represented by cards connected to a PBX network cabinet.

33. (Previously Presented) Apparatus for dynamically adapting a PBX network to maintain a Quality of Service level in the network comprising as set forth in claim 29, wherein:

adaptive optimization determines whether a channel is inactive and re-maps an active channel to an available inactive one.

34.-37. (Canceled)

APPENDIX B

EVIDENCE APPENDIX

None

APPENDIX C

RELATED PROCEEDINGS APPENDIX

None

APPENDIX D

PRIOR ART APPENDIX

Daniel Reference

U.S. Patent No. 5,726,985 B1

Chang Reference

U.S. Patent Application Publication No. 2003/0091028

Campbell Reference

U.S. Patent Application Publication No. 2003/0140159

Geagan Reference

U.S. Patent No. 6,263,371 B1